

CLAIMS

What is claimed is:

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1. A powder comprising metal containing or metal alloy containing anisotropic particles, wherein said powder is produced by a method comprising the steps of:
- (a) heating a starting powder consisting essentially of non-dendritic metal or metal alloy containing particles under conditions suitable for initial stage sintering, thereby forming a lightly sintered material; and
- 10 (b) breaking the lightly sintered material, thereby producing a powder comprising anisotropic particles having irregular morphology, said particles comprising aggregated and fused non-dendritic metal or metal alloy containing particles having an air-laid density which is lower than the air-laid density of said starting powder.
- 15 2. The powder of Claim 1 wherein step (a) and step (b) are performed, in sequence, two or more times.
3. The powder of Claim 2 wherein the lightly sintered material is broken by agitating said material.
4. The powder of Claim 1 wherein the powder comprising non-dendritic particles is heated in step (a) in a substantially uniform layer.
- 20 5. The powder of Claim 4 wherein the layer has a thickness of about two centimeters or less.
6. The powder of Claim 1 wherein the non-dendritic particles independently have a largest dimension of about 10 μm or less.

7. The powder of Claim 1 wherein the lightly sintered material is broken by brushing said material through a screen.
8. The powder of Claim 1 wherein step (a) is conducted at a pressure between 0 atmospheres and about 1.5 atmospheres.
- 5 9. The powder of Claim 1 wherein step (a) is conducted under vacuum, in an inert atmosphere or in a hydrogen atmosphere.
10. The powder of Claim 9 wherein the inert atmosphere comprises dinitrogen, argon, or helium.
- 10 11. The powder of Claim 1 wherein the particle comprises nickel, chromium, molybdenum, cobalt, iron and combinations thereof.
- SB 12. The powder of Claim 11 wherein said powder has an air-laid density of about 2.4 g/cm³.
13. The powder of Claim 1 wherein the alloy is a stainless steel.
14. The powder of Claim 13 wherein said powder has an air-laid density of about 1.5 g/cm³.
- 15 15. The powder of Claim 1 having a purity essentially equal to that of the starting powder.
16. The powder of Claim 1 wherein the particles comprise a ceramic.

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17. The powder of Claim 16 wherein the ceramic is a metal oxide, a metal nitride, a mixed metal oxide, a metalloid oxide or a metalloid nitride.
18. A powder comprising metal containing or metal alloy containing anisotropic metal particles having irregular morphology, said particles comprising aggregated and fused non-dendritic metal or metal alloy containing particles.
19. The powder of Claim 18 wherein the metal alloy is a stainless steel.

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